

Claim Amendments

1-18. (canceled)

19. (new) A method of vaccinating a living being against infections by leishmania using a vaccine comprising immunizing polynucleotide sequences; said polynucleotide sequences comprising DNA expression constructs; said DNA expression constructs comprising covalently-closed, linear deoxyribonucleotide molecules; said deoxyribonucleic acid molecules each comprising a linear double-stranded region; said double-stranded region comprising single strands being linked by short, single-stranded loops of deoxyribonucleic acid nucleotides; said double-strand-forming single strands comprising: a terminator sequence, and a coding sequence encoding at least the p36 LACK antigen under control of a promoter sequence operable in the living being that is to be immunized; said DNA expression construct being covalently linked to at least one oligopeptide to increase transfection efficacy; said at least one oligopeptide comprises 3 to 30 amino acids; at least half of said amino acids of said at least one oligopeptide are members of the group comprising arginine and lysine; and said method comprising the steps of:

injecting said vaccine comprising said DNA expression constructs into a living being; and

eliciting, with said DNA expression constructs of said injected vaccine, an immune response in the living being against infections by leishmania.

20. (new) The method as claimed in Claim 19, wherein said at least one oligopeptide comprises the amino acid sequence PKKKRKV (proline - lysine - lysine - lysine - arginine - lysine - valine) (Seq ID 3).

21. (new) A method of making a vaccine for vaccinating a living being against infections by leishmania using a DNA expression construct comprising covalently-closed, linear deoxyribonucleotide molecules; said deoxyribonucleic acid molecules each comprising a linear double-stranded region; said double-stranded region comprising single strands being linked by short, single-stranded loops of deoxyribonucleic acid nucleotides; said double-strand-forming single strands comprising: a terminator sequence, and a coding sequence encoding at least the p36 LACK antigen under control of a promoter sequence operable in the living being that is to be immunized; said

DNA expression construct being covalently linked to at least one oligopeptide to increase transfection efficacy; said at least one oligopeptide comprises 3 to 30 amino acids; at least half of said amino acids of said at least one oligopeptide are members of the group comprising arginine and lysine; and said method comprising the steps of:

- constructing plasmid pMOK p36;
- covalently attaching an NLS peptide comprising amino acid sequence PKKKRKV (Seq ID 3) to oligonucleotides; and
- producing, using said plasmid pMOK p36 and NLS-attached oligonucleotides, said DNA expression construct and thus a vaccine for vaccinating a living being against infections by leishmania.

22. (new) A vaccine for vaccinating a living being against infections by leishmania, said vaccine comprising:

- a DNA expression construct comprising covalently-closed, linear deoxyribonucleotide molecules;

- said deoxyribonucleic acid molecules each comprising a linear double-stranded region;

- said double-stranded region comprising single strands being linked by short, single-stranded loops of deoxyribonucleic acid

nucleotides;

said double-strand-forming single strands comprising:

a terminator sequence, and

a coding sequence encoding at least the p36 LACK antigen under control of a promoter sequence operable in the living being that is to be immunized;

said DNA expression construct being covalently linked to at least one oligopeptide to increase transfection efficacy;

said at least one oligopeptide comprises 3 to 30 amino acids;

at least half of said amino acids of said at least one oligopeptide are members of the group comprising of arginine and lysine.

23. (new) The vaccine as claimed in Claim 22, wherein said at least one oligopeptide comprises the amino acid sequence PKKKRKV (proline - lysine - lysine - lysine - arginine - lysine - valine) (Seq ID 3).